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ABSTRACT

One of a series examining the instructional effectiveness of a videodisc-based case methodology, this study analyzed communication patterns among preservice teachers during implementation of a videodisc-based case methodology for preservice remedial reading instruction. Subjects, 12 students in an undergraduate remedial reading and practicum course, used 3 cases recorded on videodisc to explore authentic classroom and Chapter 1 situations. Hypercard technology was developed also to enhance the effectiveness of the instruction by encouraging access to multiple sources of information. Daily field notes taken during 14 class meetings were transcribed for use in a microanalysis of patterns of classroom discourse and to generate descriptions of opportunities for learning that occurred between the instructor and students. Four patterns emerged from the analysis of the discourse data: (1) the method produces active engagement and generative learning of students; (2) mediated learning has multiple textures; (3) rich contexts invite indepth analyses of information and higher-order thinking; and (4) sequenced instruction is replaced by learning that is situated in rich, complex contexts. Findings suggest that the design for using video-based cases to present authentic classroom problems can have powerful effects on preservice teachers' learning. (A list of 21 references is attached.) (RS)

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PREPARING PRESERVICE TEACHERS FOR REMEDIAL INSTRUCTION: TEACHING PROBLEM SOLVING AND USE OF CONTENT AND PEDAGOGICAL KNOWLEDGE

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The teacher education reform movement of the last decade suggests that the learning experiences of future teachers should be situated in problem solving environments that require the analysis of complex and authentic classroom problems (Berliner, 1985; Clandinin & Connelly, 1984). Most researchers and teacher educators agree that teaching, occurring in relatively ill-defined environments, requires not only knowledge about what to do but the ability to know when and how to use this information when confronted with problems and unexpected situations (Clark, 1988; Green & Leinhardt, 1986). Yet Goodlad (1990) and others suggest that teacher education programs do not adequately prepare teachers for the realities of complex classroom situations. Goodlad argues that teacher educators have made little progress in responding to the critics of the 60s (e.g., Sarason, Davidson, & Blatt, 1962) who indicated that teachers often have difficulty connecting information learned in teacher preparation programs to information needed for evaluating and responding to problems and unexpected situations in the classroom. In concert with Goodlad's argument teacher educators indicate that methods courses, microteaching, and other preteaching experiences often fail to equip teachers with problem solving strategies because they do not reflect the "intrinsic uncertainty of teaching" (Clark, p. 10) and may present a simplistic or unrepresentative view of teaching (Ball & Feiman-Nemser, 1986; Clark, 1988).

Calls for reforming preteaching experiences have direct implications for examining reading methodology courses and related field experiences if our goal for these courses is to prepare teachers to approach literacy instruction from a problem-solving perspective. Classroom and reading teachers are constantly required to make informed decisions that may or may not result in appropriate reading instruction for classes with a wide range of student abilities and backgrounds.

At Vanderbilt University, we are implementing a project, partially funded by a Sears-Roebuck Foundation Grant (Risko, 1989), in which instruction is anchored in video-based contexts for the analysis of problems confronting teachers. We propose that anchored instruction (Bransford, Vye, Kinzer, & Risko, 1990), coupled with case methodology, is one way to create shared learning experiences among a professor and students and to help future teachers recognize similarity between information learned in college classes and information required for successful teaching in real classrooms. Our anchored instruction uses videodisc and hypercard technology to foster a learning environment where the preservice teacher is the producer of knowledge rather than a passive recipient, and to this end, emphasizes generative learning activities, co-operative learning, and problem-oriented activities. Case methodology, as described by Christensen (1987) and Learned (1987), is a process-oriented approach that encourages problem formulation and problem solving. Applying our notion of anchored instruction to case methodology, our cases (on videodisc) represent complex teaching situations and contain multiple sources of embedded information.

In two previous papers (Risko, Yount, & Towell, 1991; Risko, 1991) we presented the rationale and design for our video-based case methodology. The goal of this paper is to invite further thinking about the use of our methodology within a college class. Multiple data sets, collected across several semesters, are being analyzed to evaluate this approach on our students' learning. This paper focuses on one important phase of our research, an analysis of communication patterns among class members during the implementation of our instruction. We present patterns emerging from our analysis of classroom discourse data to describe the social dimensions of communication occurring in our classroom and to identify the nature of idea generation and problem solving occurring during instruction. This analysis allows us to make inferences about how knowledge is constructed and communicated and how information

is used for solving problems.

Methodology and Procedures

It has been observed that social participation in collaborative problem solving environments can positively influence students' learning and reasoning (Heath, 1991). Discourse data were examined to trace the process of students' learning and participation during our case-based instruction.

Setting and participants. Our research was conducted in an undergraduate course, Remedial Reading and Practicum. This course is required for elementary and special education majors. All preservice teachers enrolled in this course previously completed a developmental reading course, a language arts course and an accompanying practicum. For the first seven weeks of the semester, regular class sessions were held on campus twice a week. During the next five weeks, each preservice teacher was assigned to a practicum setting and was responsible for planning and implementing a reading instructional program for a low achieving student. For the last week, the preservice teachers returned to the college class and shared information about their practicum student following a "case" format.

Instruction in college class. Across all class sessions, the instructor and students participated as a whole class to examine the video-based cases. Three cases recorded on videodisc were used to explore authentic classroom and Chapter I situations. Each case contains various forms of naturally occurring classroom events (e.g., teacher-student interactions, teacher questioning, student participation in reading and writing activities) demonstrating factors that contribute to the complexity of reading problems. The video cases are supplemented by related text materials and information corresponding to each case (e.g., child's assessment protocols, teachers's lesson plans, samples of student's writing) to provide a detailed study of each student's reading abilities and problems. Taking advantage of the

rapid, random access and freeze-frame capabilities of videodisc technology, the professor and students often reexamined and "cross-examined"scenes and cases for different reasons and to access information that was difficult to describe in written or verbal accounts (e.g., teachers' nonverbal cues).

Hypercard technology was developed also to enhance the effectiveness of instruction by encouraging access to multiple sources of information. From a main menu, numerous cards were accessed on the computer for exploring a wide range of factors (e.g., text characteristics, instructional context, beliefs/attitudes) that may contribute to target reading problems. Such technology supported the use of videodiscs to facilitate case analysis from multiple perspectives and to facilitate multiple connections between text and video information.

Data collection. The data were collected during the spring, 1991 semester. All twelve students enrolled in the course were either juniors or seniors. The first researcher taught the course. The other two researchers became observer-participants in the course conducting an indepth analysis of our approach. Daily field notes taken during our fourteen classes were transcribed for use in a microanalysis of patterns of classroom discourse and to generate descriptions of opportunities for learning that occurred between the instructor and students (Wood, 1989, 1990). Our analysis of classroom discourse was conducted within the tradition of qualitative research in which an interpretative stance guides the data analysis (e.g., Atkinson & Hammersley, 1988; Firestone, 1985; Jacob, 1987, 1988).

Patterns of Discourse within Video-Based Case Methodology

Four patterns emerged from our analysis of discourse data. The patterns presented in the following sections were consistently documented across class sessions. Segments taken from our discourse data are used to illustrate how the professor and students participated in

this instruction.

Active engagement and generative learning of students

One goal of our project is to invite students' active participation in their own learning. We hope to move away from a professor lecturing about what is in his/her head by inviting students to generate their own questions and hunches to guide case analysis. Observations of our students' participation in class discussions suggest that they are actively engaged in the exploration for learning about our cases. The following examples illustrate the nature of student involvement. Within each excerpt of the discourse, R designates the professor and a different letter codes each preservice teacher.

In this episode (occurring January 21), the preservice teachers were introduced to their first case, Emma. After reading a general description of Emma provided by her reading teacher, they observed an interview in which the reading teacher is describing Emma and the instruction in the Chapter One classroom.

R: Here we have a general description of Emma provided by her classroom teacher--What do you notice? Are you learning something about her instructional context?
A: It is a skills-based chapter 1 class.
R: (This information is written on a chart) How would you describe the curriculum?
K: A lot of skills-based instruction but not creative things.
R: You are already forming an hypothesis. I'll write this at the bottom. Any others?
K: I wonder about creative ideas--writing, has it been part of her instruction?
R: Another hypothesis--something to look for as we examine instruction.

The professor records the preservice teachers' responses on one of many charts being developed corresponding to Emma's case. In the preceding and following statements, the preservice teachers are hypothesizing about Emma's instruction and generating questions for further analysis of Emma. The professor is recording information and mediating the discussion by suggesting how to categorize the information being generated (i.e., you are

forming an hypothesis for further study). The discussion continues:

A: She can't elaborate
R: And the teacher told us her inferences are weak.
J: Fluency is a problem.
R: Let's put that comment under reading behaviors and I'm going to add vocabulary as a possible problem. That was suggested by the teacher as a problem. Anything else?
J: Does she read outside of class? Does she go to the library--what are her experiences?
R: Good point--if we find that the instructional program is narrow what other kind of reading experiences are provided? What else?
Kt: How well does she do in other subjects?
A: Let's check her background, home, language, anything that might influence her.

Illustrated in the above excerpt is the shared participation of the group members, including the professor. Instead of dominating or directing the conversation, the professor acts as a co-participant. Much like the other members of the group, she mediates learning by adding information and elaborating on others' ideas. This type of participation seemed to "open" possibilities for further conversation and for additional contributions by the others. These patterns are documented further in our second example which occurred the same day.

In this episode, the preservice teachers are viewing Emma's Chapter One teacher interviewing her. They have just watched the teacher explain that she will ask Emma some questions about herself and her reading habits. The professor stops the disc and initiates the following discussion.

R: What is the purpose of an interview?
An: To find out more about a student than just how he/she performs on school work.
R: Other reasons?
Kt: To learn about a child's interest .
R: Would you use a structured or informal procedure?
M: Probably to find answers to specific questions--structured
R: So you are suggesting to go in with a plan, a list of questions. How is this different from an informal procedure?
M: You go in just to talk
Kt: A structured interview provides answers to specific questions as compared to

an informal interview where you look at patterns as a whole.

R: When can an informal interview occur?

Ju: Some question may spark something that leads to more information.

J: Maybe you are helping a child with an assignment and this problem may occur and this leads to talking more about it.

Notice how students build on each others' ideas in a natural, conversational manner.

Most of the discussion has focused on structured interview procedures and this information is developing accurately. The professor notes that the concept of informal interviewing will be revisited when Emma is interviewed by her teacher during a reading assignment. Students conclude their viewing of the interview with Emma.

R: What kind of interview was this?

K: Structured--following a set of questions.

R: What are some of the things we've learned about her?

K: She does like to read some

Ju: She is very interested in basketball

R: What else does she like?

Ju: Comics

J: She likes Ramona Quimby

R: Time after school

Ju: Nintendo

K: Likes TV 3 hours a day. Could be worse.

Ju: Could she be spending some time playing Nintendo?

J: She sounds like a latchkey child so TV could be used for companionship. [Goes on to describe her own experiences as a latchkey child growing up with a mother who is a teacher. Talked about watching television after school as a "time filler" until her mother came home.]

A: There is not much reading in home.

R: She did mention a few magazines, like Jet and Sprint that she reads

K: I thought her reading was a lot more hopeful than I expected.

A: I think she is clever, bright in general and kind of "with it".

R: Where do we put that?

J: Under hypotheses about Emma's abilities.

K: Social studies is not activity-based at all

R: It does sound like a text-based program [based on Emma's description]

K: Emma is pretty confident during the interview

R: Good observation. What are her goals?

K: She wants to be a librarian.

R: What about the interview itself--as an instrument for assessment? What did you notice?

Kt: The teacher was very confident. She used open-ended questions. This made Emma feel comfortable.

A: After she [teacher] asked a question she then asked follow-up questions.

R: The teacher did take time to explore interests. What else did you notice?
Mc: This was more like conversation
Ju: The questions flowed
R: The teacher had a plan for the questioning in her head, but it didn't "feel" like a test.
J: I need a tape recorder for this.
Ju: Yes, the teacher wasn't writing after every statement
R: It seems that you are saying that you want the interview to flow like a natural conversation.

Several observations can be made about the above example. First, eight of the twelve students actively participated in this 3-4 minute conversation. The discourse pattern indicated that the class participants (including the professor) listened to each other and either elaborated on each other's comments or extended the discussion by adding their own insights and/or summary statements. Second, the preservice teachers spontaneously made connections between case information and prior experiences (e.g., latchkey kid), and case information and text readings (e.g., structured vs. informal interview information). This observation is important because it tells us more about the advantages of shared-learning contexts for the analysis of problems. Too often, class instruction follows a lecture-mode in which the professor refers to text and personal examples to illustrate target concepts. This may be followed by the students' sharing of an interpretation of the readings or a personal experience. Such instruction, however, is linear, often forcing students to make sense of what may appear to be disparate or unimportant information. In contrast, information shared within a rich context of commonly-shared experiences enables students to make connections across ideas and to recognize how to apply relevant knowledge to specific conditions and situations.

Third, the preservice teachers' metacognitive awareness of the importance of specific information, such as interview procedures was demonstrated in their spontaneous statements. Instead of being told what experts know about interviewing (facts) or how experts conduct

interviews (procedures), the preservice teachers generated this information (e.g., use of tape recorder, use of conversational style) from their examination of the case.

As indicated above, these first two examples occurred on the first day of our anchored instruction. Even on this first day, the preservice teachers actively participated in the case analysis to frame problems and to suggest questions for further study. Instead of the professor doing most of the talking and presenting his/her interpretations or "the conclusions in a field of intellectual inquiry" (Bruner, 1963, p.14), which typically happens in college classes, learning is centered by students' own inquiry, formulation of hypotheses, and generation of problems and problem solutions.

Mediated learning has multiple textures

The above excerpts are shared to illustrate the active participation and generative learning of the class members. These same excerpts can be reexamined to illustrate another characteristic of our methodology. Just as our cases are revisited in class to examine information from multiple perspectives, these excerpts can be reexamined to delineate multiple patterns emerging simultaneously from our discourse data.

Embedded in the above excerpts are some illustrations of the many textures of mediation that we observed. The students and professor guided each other's learning by initiating questions (e.g., has writing been part of her curriculum?), by summarizing (e.g., It seems that you are saying that you want the interview to flow like a natural conversation), and by elaborating (e.g., ...TV could be used for companionship). Students also referred to their readings to support their ideas and to enhance the class discussion.

The instructor, too, referred to supporting literature to encourage further thinking and elaboration. An illustration of this occurred on January 21 after a student talked about the "cycle of failure" that was so prevalent in a former practicum site. The following occurred.

R: [That reminds me of the article] 3,000 Paper Cranes
K: Yes, kids need to really get into something in order to believe they can do it. In that story it was a fluke--community involvement. Kids in lower reading groups don't get into neat things.

On another occasion, related literature was explored in depth within the context of the cases. On February 13, the class examined Emily, the second case study. During an interview with her mother, Emily was described as having a "visual perceptual problem".

R: Emily was described as being unsure of certain letters and words--dog, bag, pet, or bet. May need to think of what Wiesindanger and Bader would recommend. Let's go back and remember their article (Wiesindanger, & Bader, 1987). First step--put word in context. Second step--children generate the word--lots of sentence formation. What's the purpose of context?
Kt: They may be able to see more how it's used in a sentence.

This discussion continues with the students and professor describing each step of the procedure until one of the students summarizes the purpose of the authors' recommendations.

M: Starts out in context, then practiced, put back in context, combines phonics and meaning--to provide different strategies.

Text readings were integrated into the discussion to help students analyze issues and problems from different perspectives.

Another form of mediation originated from students' spontaneous comments that alerted others in the group to the importance and relevance of information being studied. For example, on January 23, the students were discussing Peter Johnston's article (Johnston, 1985) in which Johnston presents case information about three adult nonreaders. The following dialogue occurred.

An: This was an important handout. It is great--student teachers need to know that people are older than 1 or 2 years old that can't read-- personally, I didn't know
K: Wild that people can get through school and can't read. I remember reading in the Read Aloud Handbook and the statistics were shocking about who/how many can't read. [She goes on to describe what she read]

Learning was also mediated by the preservice teachers' introduction of concepts and

vocabulary that became part of the classroom discourse, vocabulary that took on its own shared meaning within the course and served as a referent to a set of complex ideas. For example, on January 21, M described a former practicum experience with a group of students described as low readers. M told us that these students were assigned to old basal readers "containing language that was stilted and characters who were uninteresting. Students didn't like to read because of the books". As she talked further about the poorly written stories, she introduced the term "icky" to represent these text characteristics.

This term was used repeatedly throughout the semester when discussing poorly written texts. For example, on February 4, the professor and students were discussing problems with paragraphs used to assess oral reading on standardized tests. The professor and two of the students indicated that these passages fit the "icky" concept because they were not authentic stories (e.g, characters and plot are not developed).

As students participated in the discourse around each case, multiple forms of interaction served to enhance and extend the thinking of group members. Their level of communication created multiple opportunities to construct meaningful interpretations of case information.

Rich contexts invite indepth analysis of information and higher-order thinking

Our cases are developed to encourage preservice teachers' sustained exploration of complex, authentic problems. Each case presents a coherent story about a student experiencing a reading problem. A specific problem is not defined nor is a unidimensional, specific solution provided. Multiple classroom events involving the student and several interviews with the parent, teacher, and student illustrate the complexity of factors surrounding a teacher's decision-making with regard to the pupil's reading instruction. The multiple sources of information invite our preservice teachers to analyze and synthesize case

information, to examine interrelated factors, and to generate reasonable interpretations, analogies, and conclusions.

The following example, that occurred on February 25, is used to illustrate how students used concepts studied within previous cases to analyze new information and to extend their thinking about previous decisions. In this example, the students are discussing a written case study of Trevor (Waddell & Risko, 1989). Trevor's teacher integrates reading and writing strategies for his instructional program. Included in her approach are predictable books, invented spelling, writing like an author, and so on.

R: Why did Trevor write "Hardware Store" the way that he did?
Kt: Maybe that is how he saw it on a sign.
R: Yes! Notice, also, that the lima bean V organizer was used to organize what he wrote. At the end of the year, Trevor had 209 pieces of writing, plus 6 books, and 20 newsletters. He wrote to an author and he wrote back with invented spelling. This was Eric Carle, author of the Hungry Caterpillar.
Kt: Emily seems like she would have been interested in this. Not sure about Lem.
R: Why do you say that? What about Lem?
Mc: It would help to bring him out of his shell, it is real, builds on his own interests.
K: If everyone else was doing [the reading/writing], he would.
Kt: I think predictable books would be good for Lem.
R: Yes, they would have structure, supporting repeated readings.
J: Lem sounds like Trevor anyway.
K: Practicing writing would gain organizational skills that Lem needs.

Once again, we noticed spontaneous use of information for thinking about problems. The students integrated information across sources to form analogous relationships which enabled them to acquire information about conditions under which it is useful to know various concepts and facts (Bransford, Kinzer, Risko, Rowe, & Vye, 1989). Newly acquired knowledge was accessed to analyze information within a particular situation and to help them know when and how to use this information for examining similar problems.

Often students generated questions that required a deeper understanding of the case concepts and related readings. For example on February 6, the students were viewing and

analyzing Emma's instruction. "An" observed that Emma needed help in decoding and asked "How would you do skills and decoding for Emma? Without taking away from the [meaning of] the story?" Over the next several days, we viewed "contrast sets", lessons in which Emma received either skill-based or literature-based instruction. Much discussion was generated about the instructional practices. Finally, on February 11,"An" noticed that the teacher in the literature-based lesson was showing Emma "more than one way to find out a word". This included "breaking down the word in parts" and providing a contextual framework for what "Kt" then described as "giving her a strategy to figure out a word." This illustration is used to show how the students' sustained thinking about complex information facilitated ability to interpret procedures of the teacher, judge the appropriateness for Emma, and draw conclusions about its helpfulness. We believe experiences such as these enable our students to understand problems that experts encounter and the knowledge these experts use as tools for problem solving (CTG, 1990).

Sequenced instruction is replaced by learning that is situated in rich, complex contexts

The cases presented on videodisc are multidimensional. Several problems and multiple examples of concepts are embedded in each case. Examining each case from multiple perspectives requires integration of information across sources. Therefore, target concepts are taught within the context of each case and the order for their presentation is usually determined by the students and/or the questions generated during the discussion. Instruction does not follow in a predetermined sequential order. For example, instead of teaching oral reading analysis on one day, text factors on a second day, and levels of questions on a third day, all of these concepts might be discussed on the same day when analyzing a student's oral reading performance on a particular passage. This notion is illustrated by what occurred in the following example. On January 23 the group analyzed

Emma's performance as follows.

R: What did you notice about her oral reading of that passage?
A: The second story was kind of understood. The first story was factual.
R: Let's take notes--remember our earlier discussion of gist vs. details for thinking about a student's comprehension.
KT: She did omit and insert a word , and she still remembers what made sense. She still answered [the literal questions] correctly.
K: She has good vocabulary, definitely. Questions are really stupid--she pronounced hard words [in the passage].
R: Questions are requiring recall of really lower level details.
Students then viewed Emma's performance on the last passage.
M: She has more trouble [on this passage] because she doesn't have the schema for the word "mechanic".

This exchange served as the springboard for a more in depth analysis of topics such as text structure, comprehension, the relationship between decoding and comprehension, schema theory, and so on. We believe that learning to teach does not result from acquiring knowledge of facts and procedures--a knowledge that often remains unused in real classroom contexts. Rather, learning to teach should occur in rich problem-solving contexts that produces "knowledge that interacts with the particular context and classroom situation in which the knowledge is transformed into action" (Richardson, 1990, p. 12).

Summary

We believe our design for using video-based cases to present authentic classroom problems can have powerful effects on preservice teachers' learning. The process of helping students notice characteristics of problem situations and to define conditions under which to apply information is a goal commonly stated by teacher educators. Our students' involvement in case analysis provides them with multiple opportunities for enhancing and displaying their knowledge--knowledge required for exploring and identifying classroom problems, for analyzing multiple factors contributing to classroom events and student learning, for generating vocabulary to label and explain phenomena, for drawing inferences

about behaviors, and so on. Learning to use appropriate information in problem situations requires experiences in which our students explore and apply their factual and procedural knowledge. We believe that learning new information in meaningful contexts such as provided through our cases is more likely to help students acquire information about the use of that information and the conditions to which it is useful to apply such information. Such experiences may help preservice teachers acquire mental models of authentic classes, enabling them to think flexibly and to understand the meaning of classroom events so that they are better prepared for actual decision-making when it is needed in the classroom.

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